Claims

1. A method for tempering at least one sample wherein an plastic-based electrically conductive material of a specimen carrier (1, 14) consisting at least partially of this material for at least one specimen is applied to by an electric current/an electric voltage which causes a resistance heating of at least one portion of the plastic-based electrically conductive material, which resistance heating heats a specimen disposed on the specimen carrier (1, 14).

2. The method according to claim 1 wherein the plastic-based electrically conductive material contains a plastic material containing electrically conductive particles.

3. The method according to claim 2 wherein the particles contain graphite and/or carbon fibres and/or another carbon material.

4. The method according to any one of claims 1 to 3 wherein the particles contain at least one metal.

5. The method according to any one of claims 2 to 4 wherein the plastic material contains polyethylene and/or polypropylene and/or polycarbonate.

6. The method according to any one of claims 1 to 5 wherein at least one wall of the specimen carrier (1, 15) defining a memory location and/or a memory volume (5, 15) for the specimen or a portion or layer thereof is made of the plastic-based electrically conductive material .

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7. The method according to any one of claims 1 to 6 wherein the specimen carrier (1, 14) is integrally made of one or more plastic materials.

8. The method according to any one of claims 1 to 7 wherein the specimen carrier (1, 14) is moulded in a single-component or multi-component injection molding process.

9. The method according to any one of claims 1 to 8 wherein the specimen carrier (1, 14) comprises a pipette tip and/or a syringe and/or a cuvette and/or a reaction vessel and/or a centrifugating vessel and/or a microtitration plate and/or a test band and/or a bio-chip.

10. The method according to any one of claims 1 to 10 wherein the specimen carrier (1, 14) is a device having a contact area for putting on and tempering another specimen carrier that directly contains the specimen.

11. The method according to any one of claims 1 to 10 wherein the specimen carrier (1, 14) comprises electric contacts and/or electric printed conductors and/or electronic components.

12. The method according to any one of claims 1 to 11 wherein the heating and/or cooling of the specimen is controlled by the composition of the electrically conductive material and/or the shape given to the specimen carrier (1, 14) and/or by applying a certain current and/or a certain course of current at certain points and/or by applying several certain currents and/or courses of current at several certain points and/or by applying a certain voltage and/or a certain course of voltage at certain points and/or by applying several certain voltages

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and/or courses of voltage at several certain points and/or by using a cooling apparatus.

13. The method according to any one of claims 1 to 12 wherein the heating and/or cooling of the specimen is determined by installing at least one temperature sensor (11) in the specimen and/or integrating at least one temperature sensor in the specimen carrier (1, 14) and/or at least one optical temperature sensor and/or by determining the internal resistance of the specimen carrier (1, 14).

14. The method according to any one of claims 1 to 13 wherein the specimen carrier (1, 14) is applied to by at least one direct current and/or at least one alternating current and/or at least one direct voltage and/or at least one alternating voltage.

15. The method according to any one of claims 1 to 14 wherein the specimen is further treated and/or transported and/or stored on the same specimen carrier (1, 14) prior to and/or during and/or after heating.

16. The method according to any one of claims 1 to 15 wherein the volume of the specimen is capacitively measured on the specimen carrier (14).

17. The method according to claim 16 wherein at least one capacitive measuring sensor (17) of the specimen carrier (14) which is associated with a memory location and/or a memory volume (15) for a specimen is connected to a capacitance measuring circuit for a capacitive measurement.

18. The method according to claim 17 wherein capacitor plates (17) formed by the plastic-based electrically conductive material of which the specimen carrier

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(14) is partially made are connected to the capacitance measuring circuit for a capacitive measurement.

19. The method according to any one of claims 1 to 18 wherein the specimen carrier (14) is contacted by means of electrically conductive needles (20) in order to apply the electric current/the electric voltage to the specimen carrier (14) for resistance heating and/or to connect the capacitance measuring circuit to the capacitive measuring sensor (17).

20. The method according to any one of claims 1 to 19 wherein the specimen carrier (1, 14) is discarded after use and/or is cleaned and/or is re-used.

21. A apparatus for tempering at least one specimen, particulary by performing the method according to any one of claims 1 to 20, comprising
    - a specimen carrier (1, 14) made of a plastic-based, at least partially conductive material for at least one specimen, and
    - a device (6, 7, 9) for applying an electric current and/or an electric voltage to the plastic-based electrically conductive material in order to cause a resistance heating of at least some part of the plastic-based electrically conductive material, which heating heats a specimen disposed on the specimen carrier (1, 14).

22. The apparatus according to claim 21 wherein at least one wall of the specimen carrier (1, 14) defining a memory location and/or a memory volume (5, 15) for the specimen or a portion or a layer thereof is made of the plastic-based electrically conductive material.

23. The apparatus according to claim 21 or 22 wherein the specimen carrier (14) has at least one capacitive measuring sensor (17) associated with a memory location and/or a memory volume (15) for a specimen to measure the volume of the at least one specimen and a capacitance measuring circuit connected to the capacitive measuring sensor (17).

24. The apparatus according to any one of claims 21 to 23 wherein the capacitive measuring sensor has capacitor plates (17) which are formed from a plastic-based electrically conductive material of which the specimen carrier (14) is partially made.

25. The apparatus according to any one of claims 21 to 24 wherein the specimen carrier (1, 14) is made of one or more integrally interconnected plastic materials.

26. The apparatus according to any one of claims 1 to 25 wherein the specimen carrier (1, 14) and the devices (6, 7, 9) for applying an electric current and/or an electric voltage and/or the capacitance measuring circuit have electric contacts (8, 9) via which at least one electric current and/or an electric voltage can be applied to the specimen carrier (1, 14) and/or is adapted to be connected to the capacitive measuring sensor (17) via the capacitance measuring circuit.

27. The apparatus according to any one of claims 21 to 26 wherein the devices (6, 7, 9) for applying an electric current and/or an electric voltage and/or the capacitance measuring circuit are adapted to be connected to the specimen carrier (1, 14) via a needle bed adapter (19).

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28. The apparatus according to any one of claims 21 to 27 which has an apparatus portion which comprises the device (6, 7, 9) for applying an electric current and/or an electric voltage and/or the capacitance measuring circuit and/or the needle bed adapter (19) and is separable from the specimen carrier (1, 14).

29. The apparatus according to any one of claims 21 to 28 wherein the separable apparatus portion (6, 7, 9) is stationary and/or portable.

30. The apparatus according to claim 28 or 29 wherein the separable apparatus portion (6, 7, 9) comprises a pipetting device and/or a proportioning device and/or a spectrometer and/or a device for treating reaction vessels and/or for treating centrifuge vessels and/or for treating microtitration plates.

31. The apparatus according to any one of claims 21 to 30 wherein the device (6, 7, 9) for applying an electric current and/or an electric voltage has a direct-current source and/or an alternating-current source and/or a direct voltage and/or an alternating-current source.

32. The apparatus according to any one of claims 21 to 31 wherein the specimen carrier (1, 14) and/or the device (6, 7, 9) for applying an electric current and/or an electric voltage have one or more temperature measuring devices (11, 12, 13).

33. The apparatus according to any one of claims 21 to 32 wherein the device (6, 7, 9) for applying an electric current and/or an electric voltage has a device for controlling the heating of the specimen.

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